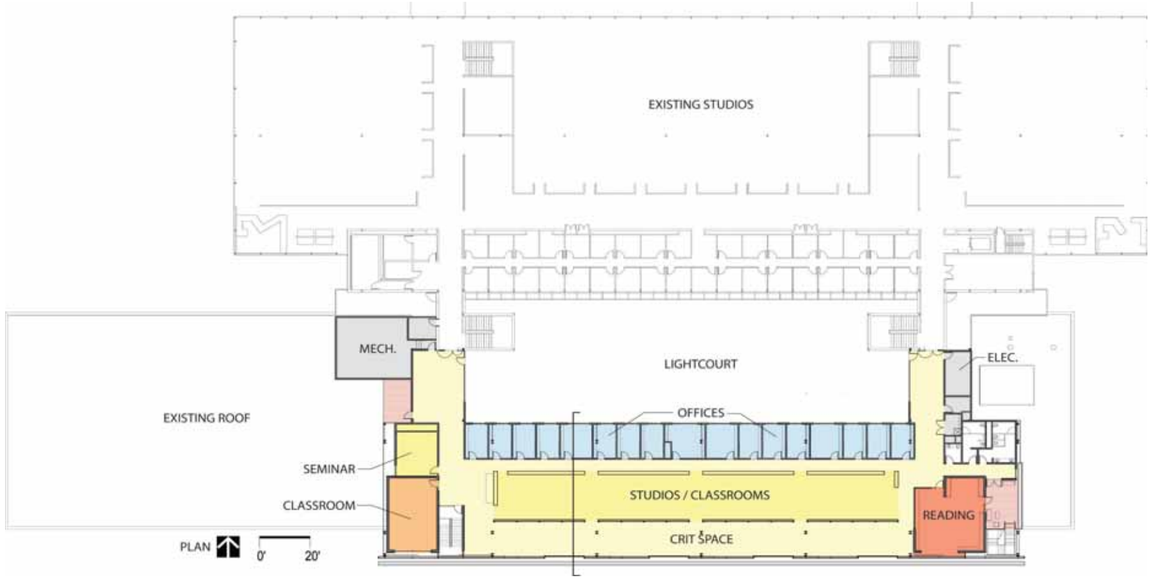
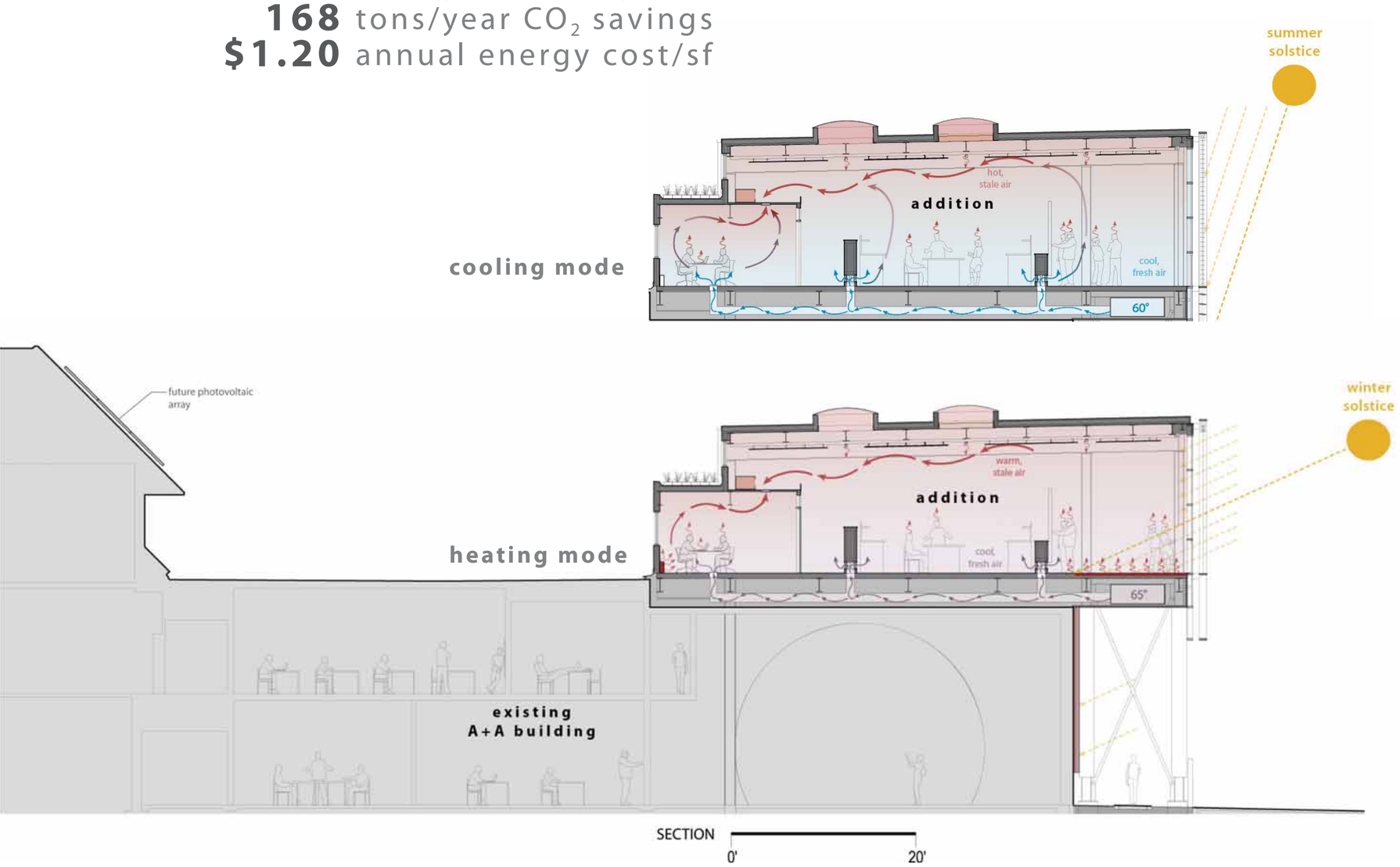
UNIVERSITY OF MICHIGAN
ART + ARCHITECTURE BUILDING ADDITION

Location: Ann Arbor, Michigan
Space Type: Academic/Office
Total Square Footage: 15,782 sf

The Art + Architecture Building Addition project will add new office and academic spaces to the growing Taubman College of Architecture + Urban Planning at the University of Michigan. Taking up no new site area, the addition will be built atop the existing structure in an environmentally-ideal location where it is envisioned to help prepare students for a future increasingly involved in sustainable design. A glassy south façade and kinetic sun shade veil will perform as an efficient passive solar "engine" in cold winters and hot summers, and will broadcast the college's active design studio culture to the University and community beyond.



71.6 kBtu/sf/year (site EUI)
152.6 kBtu/sf/year (source EUI)
46% CO_2 production reduction
90 Energy Star rating
2,049,772.7 kBtu/year Energy savings
168 tons/year CO_2 savings
$1.20 annual energy cost/sf



SUSTAINABLE STRATEGIES

SUSTAINABLE SITING
- Building on top of existing building
  - Reduce heat loss of existing building
  - Shade existing building with new overhang
  - No net increase of impervious surface
- Ideal orientation
  - Passive Solar
  - Daylighting
  - Ventilation

DAYLIGHTING
- No electric lighting required during the day
- Translucent skylights
- North-facing clerestories and windows
- South-facing glazing with glare control

PASSIVE SOLAR STRATEGIES
- Motorized exterior louver shades block/direct light
- Manually-operated interior roll-down shades
- Concrete slab floor store energy and reradiate heat
- Transpired air collector (winter only)
  - Sun heats perforated metal siding
  - Siding warms air layer between brick wall and siding
  - Pre-heated air drawn into HVAC system

DISPLACEMENT HEATING/COOLING
- Fresh air supplied low and stale air returned high
- Manually-operated VAV floor-diffusers allow individual control

RADIANT HEAT
- Hot water radiant slab @ crit space
- Hot water finned tube radiators @ offices/perimeter

NATURAL VENTILATION
- Under favorable conditions:
  - HVAC system automatically shuts off
  - Clerestory windows open automatically
  - Light signals occupants to open floor-level windows
- Outside air drawn in at night to cool building mass

GREEN MATERIALS
- Recycled content
- Salvaged and Reused
- Low-Emitting

EXTRA INSULATION
- Exceeds code by R-7.5 at walls and R-8 at roof
- Double pane insulated Low-E glazing

EFFICIENT EQUIPMENT
- 92% efficient condensing boiler
- dual flush toilets
- ultra-low flow urinals
- hands-free, PV-powered faucets

MILLER HULL

PAE CONSULTING ENGINEERS, INC.

The Miller Hull Partnership - Seattle, WA
PAE Consulting Engineers - Portland, OR

DESIGNED TO EARN THE ENERGY STAR
The estimated energy performance for this design meets US EPA criteria. The building will be eligible for ENERGY STAR after maintaining superior performance for one year.